CLAIMS

We claim:

1. A guidewire, comprising:

(a) an elongated wire assembly for percutaneously or subcutaneously penetrating into a vessel and capable of being guided to a designated region within a patient's body; and

(b) a sensor included with the elongated wire assembly for measuring the level of nitric oxide or superoxide molecules in a particular area of the patient's body.

2. The guidewire of Claim 1, wherein the elongated wire assembly is configured to allow a catheter assembly to be slidably disposed over at least a portion thereof.

3. The guidewire of Claim 1, wherein the guidewire comprises a proximal section and a distal section, wherein the distal section is more flexible than the proximal section.

4. The guidewire of Claim 1, wherein the sensor comprises:

(a) a compound which can react with nitric oxide or superoxide such that subsequent to the reaction of the compound with nitric oxide or superoxide, the optical properties of the compound change; and

(b) an optical system for measuring the optical properties of the compound.

5. The guidewire of Claim 4, wherein the optical system includes a first fiber optic line for illuminating a light on the compound and a second fiber optic line to receive the light from the compound and to relay the received light to a detector.

6. The guidewire of Claim 1, wherein the sensor comprises:

(a) an electrically conductive substrate having an amperometric response that is substantially unaffected by the presence of nitric oxide or superoxide; and

(b) a coating for reacting with nitric oxide or superoxide so as to cause a change in the electrochemical potential of the nitric oxide or superoxide.

7. The guidewire of Claim 1, wherein the sensor comprises a catalytic material capable of oxidizing nitric oxide or superoxide.

8. A diagnostic method, comprising:

(a) positioning an elongated wire assembly into a vessel, the wire assembly including a sensor for measuring the level of nitric oxide or superoxide;

(b) guiding the wire assembly to a designated region within the vessel; and

(c) measuring the level of nitric oxide or superoxide in the region of the vessel.

9. The method of Claim 8, wherein the vessel is a blood vessel.

10. The method of Claim 8, further comprising inserting a catheter over the wire assembly to treat the region of the vessel.

11. The method of Claim 8, additionally including delivering a stimulant to increase the production of nitric oxide or superoxide.

12. The method of claim 11, wherein the stimulant comprises acetylcholine.

13. The method of Claim 8, wherein the sensor comprises:

(a) a compound which can react with nitric oxide or superoxide such that subsequent to the reaction of the compound with nitric oxide or superoxide, the optical properties of the compound change; and

(b) an optical system for measuring the optical properties of the compound.

14. The method of Claim 8, wherein the sensor comprises:

(a) an electrically conductive substrate having an amperometric response that is substantially unaffected by the presence of nitric oxide or superoxide; and

(b) a coating for reacting with nitric oxide or superoxide so as to cause a change in the electrochemical potential of the nitric oxide or superoxide.

15. The method of Claim 8, wherein the sensor comprises a catalytic material capable of oxidizing nitric oxide or superoxide.

16. The method of Claim 8, wherein the designated region within the vessel is affected by restenosis.